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The User Friendliness of the Library Catalog

by

Danny P. Wallace

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Contents

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|---|----|
| Introduction | 3 |
| The Need for Catalogs | 5 |
| The Users of Catalogs | 7 |
| The Purpose of the Catalog | 9 |
| The Physical Form of the Catalog | 11 |
| The Basic Arrangement of the Catalog | 16 |
| The Content of Catalog Records | 22 |
| The Nature of Catalog Entries | 25 |
| The Arrangement of Alphabetical Entries | 28 |
| Conclusions and Implications | 30 |
| References | 35 |
| Vita | 42 |

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INTRODUCTION

Recent research in information retrieval has seen an increased concern with the development of "user-friendly" systems. Also called user-oriented or user-cordial systems, these have been described as "information retrieval systems which require no special knowledge to use, so that the full spectrum of end users can be accommodated."¹ Unfortunately, user friendliness is difficult to define with any precision, and as a result is used in a variety of conflicting and confusing ways. There are those who seem to believe, for instance, that a computerized system is inherently more user friendly than a manual system; that a touch-sensitive computer terminal is necessarily more user friendly than a keyboard terminal; or that a menu-driven retrieval system is inherently more user friendly than a command-driven system. The widespread use and abuse of the term may make it, and perhaps the concept it describes, very suspect. It has become a catch phrase, one which any system designer might like to have attached to his or her particular system.

There have, however, been some efforts made to define and limit the term. One of the most thorough examinations of the concept is that of Dehning, Essig and Maass, who surveyed the literature of user friendliness and summarized it by enumerating its essential characteristics:

1. The system's behaviour toward the user must be flexible so that the user is not forced to act in a strictly prescribed way.
2. A system must be able to distinguish among several users and adapt to them.
3. The system behaviour and its effects should be transparent to the user.
4. The system should always be helpful; it should never force the user into embarrassing situations.
5. Man-machine interaction should resemble—as far as possible—human communication.
6. System design has to take into consideration the physical and psychological needs of the user during his work with the computer.
7. System use should require no special skills.
8. Special physical and motorial skills should not be required.
9. The common linguistic and communicative skills of the user must be sufficient for leading simple dialogs.
10. The system should behave in a consistent way so that the user can learn to anticipate it.
11. The possible kinds of problem-solving should not be limited by the system.
12. The human ability of learning by doing should be exploited moderately.²

This list of characteristics can serve as a framework for evaluating the user friendliness of any particular type of system, and will be returned to later in this paper.

Although the term is most often associated with interactive computer systems, and especially with question-answering systems, the concept of designing information retrieval systems to achieve maximum accommodation to the needs of end users has a lengthier history than the term currently in vogue. Concern for the needs of library catalog users have been a significant, perhaps dominant, force in the literature about the library catalog. This study is based on English language literature dealing with library catalogs published from the time of the ascendancy of the card catalog in the late nineteenth century up to the advent of online interactive catalogs in the last quarter of the twentieth century.³

The emphasis of this study is on rhetoric rather than practice. Some of the proposals that were identified were probably never actually implemented, and no attempt has been made here to specifically compare or evaluate those approaches that were in fact reflected in practice. User friendliness is not always directly reflected in catalog practice. Thus, this study does not purport to be a test of the user friendliness of the various approaches, nor does it intend to provide a comprehensive review or evaluation of studies of catalog use or catalog users. Explicit concern with user friendliness is of very recent origin, and it is not yet possible to precisely define those characteristics which distinguish a user-friendly system from a user-unfriendly system. To a considerable extent, user friendliness can be considered subjective and arbitrary, and the term has been used in ways which imply a variety of meanings. It is nonetheless possible to analyze and categorize the ways in which user friendliness may be seen to have been a consideration in cataloging decisions.

A general concern for the user has long been standard etiquette in the literature of catalogs and cataloging, finding perhaps its most adamant expression in Cutter's contention that, "the convenience of the public is always to be set before the ease of the cataloger."⁴ Cutter's *Rules for a Dictionary Catalog* is liberally sprinkled with references to the needs and wants of users. Other writers have expressed the same idea. Perkins, for instance, asserted that the object of a catalog "is to enable the reader to find out with the least possible trouble whether the library has what he wants..." and that "it should therefore demand of the reader as little knowledge, thought or sense as possible."⁵ Wilson stated that the catalog "is for people to use, always and openly..."⁶ and Swanson identified "the user and potential user of the library..." as the focal point of catalog research.⁷

Concern for the library user may be distinguished according to several broadly defined issues. The first, not frequently addressed but upon which all other suggestions are dependent, asks whether a catalog is necessary and useful at all. The other areas of concern address the intended users of library catalogs; the basic purposes of catalogs; the physical form of the catalog; the form, content, and number of catalog entries; and the arrangement of entries within the catalog.

THE NEED FOR CATALOGS

Most writings on the catalog have assumed that some sort of individualized local catalog is necessary. However, there have been suggestions to the contrary, an early one being that of Pearson, writing in 1915 for the *Boston Evening Transcript*; "would it not be the most fortunate thing that could happen to all the libraries in the world if their catalogues should be utterly consumed by fire this very night?"⁸ Elsewhere, Pearson contended that about 90% of a library's users do not even use the catalog.⁹ Although there is a note of facetiousness in Pearson's comments, there is also a serious undercurrent of concern for whether the existence of local catalogs can be justified on the grounds of public need. Dana's comments on the catalog included the statement that "the ignorant cannot use it, the learned do not need it."¹⁰

A significant article dealing with the necessity for a library catalog appeared in 1968. Grose and Line suggested that catalogs are made necessary not by any universal principle; instead, they result from decisions regarding the arrangement of materials within library collections. The authors very deliberately set about to question the assumption that every library requires a catalog of its own holdings. A primary arrangement by title, augmented by an efficient circulation file, might provide basic known-item access, and subject access might be provided through published bibliographies.¹¹ Grose and Line cited two arguments against this proposal, "first, that it is quicker to use a tailor-made catalog...and second, that browsing becomes impossible if books are not grouped by subject."¹² They concluded that there is no firm evidence to support either argument. It is apparent that the authors' intent was to be provocative. Most of their respondents, however, registered outrage that such fundamental assumptions should be questioned, and none raised any new issues.¹³

One argument calling for the abolition of at least a portion of the catalog is the contention that library users would be better served by published subject bibliographies than by subject catalogs of individual collections.

The catalog, then, would be used only for locating items once a title and/or author had been identified. The debates between supporters and detractors of this approach were well summarized by Swank in a review of the literature covering the period 1876 to 1942.¹⁴ As described by Swank, the major issues of this controversy are the potential completeness of the two types of tools; their selectivity; the nature of the classification schemes employed; the amount of analysis provided; currency; comprehensiveness of coverage; cost; the competence of the compiler; the accuracy of the entries; the process of compilation; the difficulty of use; the anticipated amount of use; and the provision of an effective service unit within the library. As Swank pointed out, in each of these areas there are arguments for and against both subject catalogs and subject bibliographies, and "astonishingly little evidence is available to support any of those arguments."¹⁵ As mentioned earlier, Grose and Line also suggested the possibility that subject bibliographies could replace subject cataloging at least in some situations.¹⁶

Swank does not mention Young's proposal that the H.W. Wilson Company's *United States Catalog* could be used as a substitute for all local cataloging.¹⁷ According to Young, this bibliography could be modified so that "it would give information under author, subject, title, and would contain many cross references...leave enough space in the margins so that each library could insert its own call numbers..." and provide "flyleaves at the back of each publication so that local material and foreign books could be added."¹⁸ To facilitate this, Young suggested that the American Library Association supervise the Wilson Company's activities or that the Library of Congress take over the entire project. This somewhat radical set of ideas was in effect echoed by a 1968 proposal that *Books in Print*, with the addition of call numbers, could take the place of a local catalog in branch libraries.¹⁹ Neither proposal seems to have gathered much support from the field.

Ball also addressed the issue of subject bibliography *v.* subject catalog, suggesting that the argument properly revolves around whether the user is a novice or an expert in a given field.²⁰ Ball voiced the popular contention that experts have less need for subject cataloging than for subject bibliographies, but that the reverse is true for novices. Since everyone is likely to be a novice in some field, Ball argued, some sort of subject cataloging is necessary. The provision of catalog references to subject bibliographies might take the place of in-depth subject cataloging and thereby reduce the physical bulk of the catalog. She still concluded that subject bibliographies could never act as the major source of subject information in a library without some sort of augmentation or supplementation. Fruton, on the

other hand, suggested that in an academic environment a person working in a field other than his/her own area of expertise is more likely to consult a person in that field than to attempt to search the subject catalog, and that "an elaborate system of subject cards can[not] be justified on the grounds that occasionally we require material outside our area of specialization."²¹ Fruton concluded that indexing and abstracting sources and subject bibliographies are of much greater value to scientists than are subject catalogs.²²

THE USERS OF CATALOGS

If a catalog is to be truly user friendly, it must be capable of meeting the needs of all users equally while inconveniencing none. "Ideally, books and journals should be arranged, cataloged, and indexed for an *individual* user, but as the number of users expands, it becomes increasingly difficult, and then impossible, to classify, catalog, and index for individuals."²³ Many writers have emphasized the needs and desires of the "average" or "typical" user, but others have suggested that catalogs must necessarily vary according to the nature of the clientele expected to use them. The problem, then, becomes how to devise a unitary tool capable of meeting multi-dimensional needs. Dana's observation on the problems of the "ignorant" and the "learned" represents the extreme condition of this problem.²⁴ Avram has accounted for the area between the extremes by pointing out that, "the catalog user is everyman with infinite requirements."²⁵

Considerable concern has been expressed regarding the needs of different classes of users. Cutter emphasized that entries should be devised "that will probably be first looked under by the class of people who use the library," implying that entries should vary from library to library.²⁶ Doubleday suggested that the arrangement of entries in the catalog might be dependent upon the nature of its user group,²⁷ a view also expressed by Martel.²⁸ Morsch postulated a need for "special catalogs for special patrons."²⁹ Randall suggested that it might be necessary to devise "not one, but many lists of subject headings" to meet the needs of particular classes of users.³⁰ A commonly expressed concern has been the distinction between the needs of scholars or experts and those of the "ordinary" user or novice. Mann, for instance, emphasized that, "what will please the advanced student will be unintelligible to the average man; what will furnish information to the uninitiated will be useless to the specialist."³¹ Osborn criticized the justification of bibliographical detail on the basis of the needs of scholars,³² a criticism reiterated by Shera 30 years later.³³ Wilson proposed that the needs of scholars could be best met by consulting scholars in particular

fields regarding catalog design and problem solving, not by providing an excessive amount of detail without justification.³⁴ A number of catalog use studies have emphasized the varying approaches of undergraduate students, graduate students and faculty members in academic libraries. Merritt's study at the University of California found that typically undergraduates and library staff used the subject approach more than author or title approaches while graduate students and faculty used author and title approaches more than subject.³⁵ Osborn stated that, "the catalog must be adapted to the needs of varying institutions,"³⁶ and this view was supported by Miller's contention that "the local situation makes more difference in the use of the card catalog than have the differentiations according to approach and type of patron."³⁷ Possibly, then, the problem of adapting catalogs to differing classes of users could be simplified by focusing on the needs of differing classes of institutions.

The apparent need for individualization would seem to be in direct conflict with the principles of standardization and shared cataloging data. Young cited the differences from one library to another as a major catalog problem from the user's viewpoint.³⁸ Much of modern cataloging practice has been dependent upon the dissemination of uniform data from centralized sources and the development of codes to ensure that catalogs do resemble one another to an appreciable degree.

As a result of these differences among user needs, some writers have concluded that a catalog cannot be made to meet all needs. Bishop, for instance, posed the question, "can a card catalog ever be made self-interpreting?" and went on to suggest that it cannot be. Bishop's recommendations were for education of catalog users and the provision of trained catalog use assistants.³⁹ This emphasis on user education rather than catalog design has been repeated by others, including Aldrich, Ver Nooy, Mann, and Krikelas.⁴⁰ One of its strongest expressions was that of Scheerer, who stated that, "we cannot construct a machine to meet all the potential varieties of human experience. Rather we must condition the user to the operation of the machine...."⁴¹

One problem, of course, is that of identifying user needs in order to shape the catalog to fit them. Krikelas has pointed out "that there is no conclusive evidence that would help to establish the appropriate level of knowledge and familiarity that such instruction must attempt to reach."⁴² Numerous studies have been conducted, which have been adequately summarized by Krikelas⁴³ and Atherton,⁴⁴ but no general conclusions or universal principles have resulted. Dunkin has expressed pessimism with regard to the response of libraries in the event that any such results were forthcoming.⁴⁵

A number of writers have argued that there are in fact serious discrepancies between expressions of who library catalogs are intended to serve and the realities of design. According to Mishoff, "the issue, it appears to any reader of normal intelligence, is whether or not the card catalog is to continue to be a product of the catalogers, by the catalogers and for the catalogers,"⁴⁶ and Ellsworth concluded that "catalogs are librarians' and not users' tools."⁴⁷ Similar criticisms have been voiced by Butcher, Goldhor, Draper, and Pearson.⁴⁸ Not all writers, however, have felt that the creation of a catalog primarily for librarians was a bad idea: Fletcher felt that the presence of "minutely classified books on the shelves..." and the availability of skilled reference librarians made the adaptation of the catalog to library patrons unnecessary.⁴⁹ Similarly, Morsch stated that, if catalogs could not be made to serve the general public rather than "the skilled worker, the reference librarian, the order clerk, and the cataloger," it would be best to "close the catalog to the public and provide adequate information assistance to fill the needs of every patron."⁵⁰

THE PURPOSE OF THE CATALOG

It might be assumed that any design decision made regarding a library catalog would have as its basis a clear concept of the basic purposes of catalogs and cataloging. Many of the writings examined for this study, however, expressed serious concern over the apparent lack of any such concept. According to Frarey, "until catalog function is defined with some precision, it is not possible to propose final answers to questions either of theory or of method, and answers which are suggested must be considered tentative and subject to change."⁵¹ Frarey is especially critical of the apparent discrepancy between "the habits of catalog users" and the "untested assumptions" which have led to disagreements as to the purpose of cataloging.⁵⁰ Vavrek has suggested that arguments as to the shape and nature of the catalog have lost track of fundamental problems related to purpose,⁵³ a concern also expressed by Grose and Line⁵⁴ and one which provided a focus for the University of Chicago's "Requirements Study for Future Catalogs."⁵⁵ Morsch suggested that each individual library should formulate a comprehensive statement of "the scope and objectives of the library's catalog, a statement based on a study of use" as a substitute for a universal principle of the purpose of the catalog.⁵⁶

A significant controversy regarding the purpose of the catalog and of cataloging accompanied Osborn's 1941 presentation to the American Library Institute on "The Crisis in Cataloging." This celebrated talk, which later appeared in *Library Quarterly*⁵⁷ and as a monograph,⁵⁸ identi-

fied four “theories” of cataloging—the legalistic, the perfectionistic, the bibliographic, and the pragmatic—each of which is accompanied by a different view of the basic purpose of the catalog. The legalistic approach assumes that every real or anticipated cataloging need should be accounted for by an appropriate rule, so that the local cataloger is never forced to make decisions that do not have some foundation in a set of rules. This approach was seen by Osborn as creating needless delays in the cataloging process and not allowing for useful local adaptations. The perfectionistic point of view is an attempt to create catalog records that will be permanent and thereby eliminate the need for revisions over time. Osborn's view is that such permanence is neither possible nor desirable, an opinion supported by Fremont Rider.⁵⁹ The bibliographic theory sees cataloging as a branch of descriptive bibliography, and emphasizes the exact description of each book as a physical artifact. As Randall has pointed out, there is an inherent conflict between the catalog as a record of physical objects and the catalog as a service-oriented tool.⁶⁰ The last theory, the pragmatic, approaches cataloging from the standpoint of identifying specific needs and goals and doing only that which is necessary to meet them. This is apparently the theory which Osborn sees as most appropriate.

There were a number of responses to and criticisms of Osborn's paper, many of which seem to have missed or ignored the apparent purpose of his paper and concentrated either on his implied criticism of cataloging rules or his implications concerning cataloging economy. Comments such as Wright's statement that, “until we have a clear decision on the purposes of cataloging...cataloging costs will continue high,”⁶¹ and Dunkin's observation that, “catalog codes, catalogers and catalog department administrators are of value only to the extent that their catalogs help those who consult them”⁶² indicate that Osborn's paper did at least arouse some concern regarding the basic purposes and functions of library catalogs and the means for achieving those purposes and functions.

Regardless of these concerns regarding the lack of agreement on purposes, the literature has hardly been devoid of statements of the purpose of the library catalog. A great many of these statements were worded in terms of user friendliness. The purposes cited in Cutter's *Rules* have been repeated and paraphrased extensively; the “objects” of the catalog, as described by Cutter, are:

1. To enable a person to find a book of which either
 - (A) the author
 - (B) the title
 - (C) the subjectis known.

2. To show what the library has
 - (D) by a given author
 - (E) on a given subject
 - (F) in a given kind of literature.
3. To assist in the choice of a book
 - (G) as to its edition (bibliographically)
 - (H) as to its character (literary or topical).⁶³

Other statements include those of Perkins⁶⁴ and of Norris, who stated that, "the purpose of the catalogue is to give the user a comprehensive view of either the entire book stock or of sections of it; also to make it possible for him either to find a particular book, or to select one which will best serve his purpose or give the information that he requires."⁶⁵ Other statements have been made, but rarely has anything been added to Cutter's description of the purposes of the catalog, and many authors have chosen simply to cite Cutter as an authority on catalog purpose. When the first edition of the American Library Association's catalog rules appeared in 1908, its compilers chose to quote Cutter on the "convenience of the user" as the guiding force behind cataloging.⁶⁶ It is interesting to note that none of the succeeding national codes contained any explicit statement of purpose or any expression of desire to meet the needs of catalog users. Even the Paris Principles, which included a section on the functions of the catalog very similar to Cutter's Objects, rarely mentioned the users of catalogs except by implication.⁶⁷

Bishop emphasized that the purpose of the catalog is to function as a "working tool" and "not primarily a record" of accessions or holdings.⁶⁸ Ver Nooy, Mann and Hamilton were among those who advanced the value of the catalog as a reference tool.⁶⁹ One of the most unusual suggestions regarding the purpose of the catalog was that of Lowe, who encouraged that catalogs be designed so as to lure patrons away from "less attractive" books to books "higher in character" than those originally sought, thus giving the catalog the roles of readers' advisor and censor.⁷⁰

THE PHYSICAL FORM OF THE CATALOG

Despite any clear and widely accepted statement of the central purpose of the library catalog to act as a guide to the development of catalogs and the evaluation of their user friendliness, writers have been not at all loath to offer suggestions regarding the forms and qualities that they feel make catalogs most acceptable to their users. The major controversy regarding the physical form of the catalog during the period under consideration

revolved around the issue of the relative merits of the catalog in card form and the printed book catalog. Although the card catalog had come into almost universal prominence by the early twentieth century, proponents of the book catalog were vocal well into the third quarter of the century. Osborn, for instance, argued in 1934 that the book form was inherently superior to the card catalog,⁷¹ and four years later Young stated flatly that "the catalog must be in book form" in order to solve the problems encountered by catalog users,⁷² although she provided no evidence to support her contention. In the same year Rider discussed the problems of the card catalog and asserted that, "the public prefers book catalogs to card catalogs."⁷³

Probably the best summary of the advantages and disadvantages of various physical forms of library catalogs was that provided by Gull, which is reproduced in table 1.⁷⁴ Although Gull's analysis was inherently limited by the technology of the time at which it was written—and was soon outdated—it did provide some attempt to objectively appraise the value and potential of the various physical formats then available. A later but more limited comparison was provided by Atherton.⁷⁵ Gull summarized the conflict between book catalogs and card catalogs by saying that, "the advantages of printed catalogs are those desired by scholars, while those of the card catalog are those which are of greatest convenience to librarians in administering their libraries."⁷⁶ This line of argument was carried further by Kennedy in his statement that, "the great majority of people find a card catalogue much more difficult to use than a printed or sheaf catalogue."⁷⁷

The late 1950s saw the beginning of a considerable resurgence of interest in book catalogs as new technologies simplified production and thereby reduced costs. Jones, for instance, enthusiastically described the techniques used for producing a book catalog at the Junior College District of St. Louis through photoreproduction,⁷⁸ and Parker commented on the advantages of computer-produced book catalogs, stating that "one factor determining the design of catalogs...is the technology available for their creation..." and that the card catalog "came into being, not so much because of its own inherent advantages as because of one weakness of the book catalogs which had existed for centuries,..." that weakness being the "difficulty of cumulating supplements and of integrating them into the basic catalog."⁷⁹ Shera criticized the impermanence of the card catalog and the superiority of the book catalog as a lasting bibliographic record,⁸⁰ and Gore summarized the advantages of book catalogs as follows:

1. the display of numerous entries on an open page makes scanning far more efficient than in a card file;

TABLE 1
STRENGTHS AND WEAKNESSES OF VARIOUS ALTERNATIVES TO CARD CATALOGS

| Name of Record | Physical Form | Arrangements Possible | Flexibility of Intercolating New Entries | Currency and Completeness | Ease of Consultation | Widespread Availability | Speed of Searches in Subject Arrangements |
|----------------------------------|-----------------|---|--|---|--|--|---|
| Card catalog (3x5) | Cards | Numerical Accessions Alphabetic Dictionary Classified | Excellent | Excellent | Poor—only one entry visible at a time | Impactical —too expensive to distribute and maintain | Slow |
| Punched cards (fully mechanized) | Cards | Numerical Accessions Alphabetic Dictionary Classified | Excellent | Excellent | Poor—requires mechanical searching for some types of information | Impactical —too expensive to distribute and maintain cards; requires machine installation at each place of use | Medium |
| Manuscript book | Book | Numerical Accessions Alphabetic Dictionary Classified | Poorer as entries become more crowded | Excellent | Fair, but eventually entries cannot be added in order | Impactical to make copies | |
| Printed book catalog | Book | Numerical Accessions Alphabetic Dictionary Classified | None | Dependent on frequency of supplements, new editions, or cumulations | Very good for any one complete printing | Excellent | Medium |
| Manuscript shelf catalog | Loose-leaf book | Numerical Accessions Alphabetic Dictionary Classified | Poorer as entries become more crowded; leaves must be rewritten or retyped | Excellent | Good, if leaves are rewritten or retyped to preserve order | Impactical to make copies | Medium |

2. the book catalog offers less space than the card catalog;...
3. the book catalog can be placed anywhere where a need for it exists;...
4. the book catalog eliminates the great cost (in large systems) of filing cards in numerous catalogs;
5. entries in the book catalog can be directly photocopied by patrons;...and
6. the necessary periodic reprinting of a book catalog yields a no-cost byproduct of continual physical refurbishment.

Gore also echoed Young's proposal of 30 years before by suggesting that *Books in Print*, with call numbers added, could act as a substitute for a local catalog in a branch library, with the added advantage of providing the user with a record not only of what the library owns but of what exists for purchase.⁸¹

Detractors of the book catalog, however, have been about as numerous as proponents. Horner responded to Young's article by saying "book catalogs were discarded because they proved to be unsatisfactory, so why go back to them?"⁸² Ranganathan, in discussing his Fifth Law of Library Science, stated that the card form is preferable since it can most easily be modified to serve the needs of the library's public,⁸³ and Tysse provided a list of book catalog advantages similar to Gore's, but also pointed out that book catalogs are expensive to produce; become out-of-date before they are even made available to the public; are inflexible; require more consultation than a card catalog due to the necessity of searching more than one alphabet; necessitate provision of numerous copies; and are subject to wear, mutilation and theft. Tysse dismissed the possibility of using a published list to replace the card catalog, pointing out variances in classification from one library to another and the potential difficulty to the user of distinguishing between those items held by the library and other entries in the bibliography as insurmountable limitations of such an approach.⁸⁴ Pizer pointed out that the oft-argued advantage of simplified arrangement might be true for author and title entries in a book catalog but would not be true for subject cataloging unless a new approach to the creation of subject headings was developed,⁸⁵ and Swanson, in discussing the University of Chicago "Requirements Study for Future Catalogs," provided evidence that the book catalog of the Center for Research Libraries took longer to search than a card catalog.⁸⁶

Possibly the best review of the comparative values of book and card catalogs was provided by Brodman and Bolef in 1968. Based on examination of the literature of the library catalog, they concluded that the printed book catalog movement of the nineteenth century "lost its momentum because the masses of people who were just beginning to use libraries did not want them," and that the public still did not want them in the 1960s.⁸⁷

According to these authors, nineteenth-century library users realized that having a personal copy of a library's catalog was of limited use, since a trip to the library was still necessary to obtain a desired work, that browsing was generally more prominent than a search for a particular work, and that the printed catalog would be so out-of-date and incomplete as to be virtually useless.⁸⁸ To these problems the authors added the twentieth-century factors of a public accustomed to catalogs in card form, the availability of the telephone as a means of determining both holdings and circulation status at a distance, and the availability of photocopiers.⁸⁹ The combination of these factors, they contended, has "resulted in a general tendency for many printed catalogs to be produced and not used."⁹⁰ Brodman and Bolef closed their article by suggesting that the real problem is that not enough is known about the purpose and nature of the catalog in general to make valid choices among physical forms possible,⁹¹ a viewpoint which had been earlier expressed by Vavrek, who felt that the debate over the card catalog *v.* the book catalog had caused librarians to become overly concerned with mechanics and printing methods to the exclusion of the exploration of deeper and more important issues underlying library cataloging.⁹²

After World War II, libraries began seriously experimenting with the use of catalogs in microform, first in the form of photographic microreproductions of catalog cards and later in the form of computer output microfilm (COM) or microfiche. As Dwyer pointed out, "the vast majority of articles about microcatalogs focused on applications and economies rather than on patron responses."⁹³ In support of the microform catalog, Butler, West and Aveney listed the following conclusions of a study of COM catalog use in the Los Angeles County Public Library System:

1. The COM catalog is more acceptable to patrons than either its book or card alternative.
2. The specialized viewing equipment used in the test posed no obstacles to patron use of the catalog, except for patrons wearing bifocals.
3. The most significant factor in providing satisfactory patron service is having enough viewers available at a given site to eliminate waiting.
4. Catalog usage is a dependent variable, and provision of information in COM form seems to increase catalog usage at least to some degree.
5. There is no significant difference among types of user groups in reaction to the COM catalog, although juvenile users may add a dimension of play to catalog use with the motorized COM viewers.
6. Staff training, proper installation and illumination, and adequate information *about* the catalog are as important as provision of the COM publication and the viewers.⁹⁴

The first, second, third, and fifth of these conclusions can be viewed as an endorsement of the user friendliness of the COM catalog.

The disadvantages of the microform catalog from the user's point of view include alterations to the format of the entry which are sometimes made necessary by the medium, uneven illumination of the reader, focusing problems, fan noise, angle and size of the screen, and the need for instruction in the use of a new medium.⁹⁵

THE BASIC ARRANGEMENT OF THE CATALOG

The issue of how a library catalog should be arranged can be divided into two major subissues: methods of arranging alphabetical catalogs, and the comparative advantages of alphabetical, classified and alphabeticoclassified catalogs. Although arrangement of the catalog is actually an issue independent of the catalog's physical form, most of the literature dealing with catalog arrangement has assumed a catalog in card form.

The alphabetical catalog can either be a dictionary catalog in which author, title and subject entries appear in one alphabetical sequence; or it can follow one of a number of divided catalog models. Possibly the earliest and most influential proponent of the dictionary catalog was Cutter, whose *Rules for a Dictionary Catalog* was published in four editions from 1876 to 1904. Although Cutter himself felt that a classified subject catalog was more "logical" than any sort of alphabetical catalog, he asserted that the alphabetical dictionary catalog was easier to learn and to use and should therefore be the preferred catalog arrangement.⁹⁶

Cutter's views seem to have prevailed until 1905 when Fletcher of Amherst College discussed the problems of a dictionary arrangement and the advantages of a divided catalog.⁹⁷ Fletcher proposed a catalog divided into two sections, one for author entries and one in which title and subject entries would be interfiled; an arrangement which has seemingly not been supported elsewhere in the literature. He justified his stand for this particular approach to division with the premise that, "the average library patron does not readily distinguish between subject and title,"⁹⁸ a contention later repeated by Aldrich⁹⁹ and others. It is clear that these authors felt that a user-friendly catalog would not require its users to make such distinctions regarding type of entry.

As Grosser pointed out in her survey of the literature related to the divided catalog, "Fletcher's article seems to have been followed by more than thirty

years of silence in the library journals on the subject of the divided catalog."¹⁰⁰ Although Grosser's estimate of the time which passed between Fletcher's comments and the next articles on divided catalogs is somewhat inflated, it is true that it was not until the 1930s that there was much interest in or argument about the arrangement of alphabetical catalogs. In fact, Martel felt confident in asserting in 1929 that, "the dictionary catalog may be said to have proved its superiority."¹⁰¹ Martel's faith in the supremacy of the dictionary catalog, however, was definitely premature.

Mishoff appears to have been Fletcher's first follower in supporting the divided catalog as superior to the dictionary catalog, although he, like Cutter, contended that a classified catalog was superior to any type of alphabetical arrangement.¹⁰² The following year Bliss asserted that, "a dictionary catalog lacks the simplicity and directness of a dictionary," and that it was easier for the average user to distinguish between different sections of a divided catalog than between different types of entries in a dictionary catalog. Like Cutter and Mishoff, Bliss personally preferred a classified catalog, but questioned its applicability to a mass audience.¹⁰³

From this slow start came a rapid growth of the literature of the divided catalog. Grosser identified 39 articles in her 1958 survey, and her bibliography is probably incomplete.¹⁰⁴ Proponents of the divided catalog have given several reasons for their support, including the contentions that the divided catalog is less bulky and less complex than the dictionary catalog and that division alleviates catalog congestion. Detractors have argued that the divided catalog produces unnecessary scatter, requires duplication of entries, and aggravates confusion on the part of catalog users as to the distinctions among author, title and subject approaches to subject searching.

Hagedorn asserted that, "the very bulk of the catalog inspires a feeling of awe, fear and helplessness," and that division into separate author, title and subject catalogs would alleviate any such negative feelings.¹⁰⁵ Although Hagedorn recognized the possibilities of combining subject and title, author and title, or all name entries in order to produce two catalogs rather than three, he concluded that any advantage in doing so was "decidedly offset by the simplicity of the three-file system."¹⁰⁶ Hagedorn also enumerated the possible reasons for retaining a dictionary catalog and concluded that only one was tenable: avoidance of duplication, which was valid "only if economy is placed above service."¹⁰⁷ Lubetzky also supported a division into three distinct units, although he recognized the problems of separating books by an author from books about that author, separating titles and subjects beginning with the same word, and the placement of

corporate and other nonpersonal authors. Lubetzky's arguments in favor of division centered around simplification of filing and the presentation of three relatively small catalogs rather than one very large one, the implication being that a large dictionary catalog is inherently user unfriendly.¹⁰⁸ However, it is apparent that to a considerable extent Lubetzky was concerned with simplifying catalog maintenance rather than enhancing user friendliness.

Articles that describe division in particular libraries often provide rationales for the decision to divide. Burch described in some detail the division of the catalog at Duke University Library into subject and author/title catalogs, with the argument that the catalog was thereby made "more usable for the public," but provided no justification for that particular approach to division.¹⁰⁹ Dean cited "avoidance of congestion and ease of use" as goals underlying the decision to employ a subject and author/title division at Harvard University.¹¹⁰ Harkins described a similar division at Central Baptist Seminary 20 years later, and reported on a rather questionable survey of 21 catalog users, which indicated that, "the users like the divided catalog better than the dictionary catalog" but admitted that "a rather large proportion of the interviewees are confused in their approach to the catalog."¹¹¹ Specifically, 38% of the users polled indicated that they would use the author/title catalog when seeking a biography, and only 48% reported that they would use the author/title catalog when searching for a corporate author entry.¹¹² Again, no justification was given for the division into subject and author/title sections either at Harvard or at Central Baptist Seminary. Elrod reported a division into subject and author/title/person catalogs at Central Methodist College, and indicated that the decision to divide was based on a three-question survey of user preferences, in response to which 93% of the users polled indicated a preference for a separate subject catalog.¹¹³ By 1969, Lubetzky had somewhat revised his views on catalog division, supporting division into subject and name/title catalogs as a means of gaining the maximum benefit from division while minimizing its disadvantages.¹¹⁴ This approach was also supported by Johnson of Harper Hospital in Detroit, who contended that, "the patron knows that any entry which would require capitalization in normal English practice is in the 'name' section" and that the subject user of the divided catalog would not be faced with the potentially confusing presence of title entries.¹¹⁵ Johnson also pointed out that the library's staff found the divided arrangement simpler to work with and interpret than a dictionary arrangement.¹¹⁶

One argument against the divided catalog centers around the requirement that the user be able to determine whether his/her need involves an author,

a title or a subject search. As Fletcher himself pointed out, "the average library patron does not readily distinguish between subject and title."¹¹⁷ Other authors have suggested that in some cases users may have similar problems distinguishing between author and title or between author and subject. Spalding also pointed out that apparent title searches can actually be misguided attempts to fill a need for information regarding a subject.¹¹⁸ As mentioned earlier, Harkins's enthusiasm for the divided catalog was somewhat softened by the difficulty users encountered in deciding which section to use.¹¹⁹

The viewpoint of the scholar-user was expressed by Hamilton, a history professor at Duke University, who felt that "the catalogue ought not...to be carved into parts and distributed throughout the library," and that "a single dictionary catalogue would not defeat or fool the student as easily as one split up into subjects, author-title, serials, documents, special collections, etc."¹²⁰ Lubetzky apparently felt compelled to point out that authors and titles sometimes legitimately act as subject entries, thereby creating a potential for user confusion.¹²¹ McGregor suggested that, "it was largely the overlapping and grey areas between author, subject and title entries that made the integration into a single dictionary file attractive to American libraries,"¹²² and a detailed study by Krikelas pointed out that the "disguising" of subject searches may be much more common than has generally been assumed and that catalog design should attempt to account for that problem.¹²³

Heinritz took a long look at the issue of whether catalog division can relieve congestion at the catalog. Although there were a number of ways in which such a premise could be tested, there was no extant evidence to support or refute any relationship between division and congestion.¹²⁴ McGregor also criticized the claims that division reduces congestion and in fact suggested that division increases congestion, and that the only real gain from division would be in filing time, with a corresponding loss in user time.¹²⁵

A further complication of the divided catalog is the complexity of the cross-reference structure necessary and the need for duplicate entries. McGregor cited both of these factors in his defense of the dictionary catalog, and also pointed out that the total bulk of a divided catalog must be greater than that of a dictionary catalog in order to accommodate additional cross-references and duplicate entries, even though individual sections of the catalog might be relatively small.¹²⁶

The type of division discussed thus far, which is based on function, has been termed *vertical* division.¹²⁷ There have also been supporters of various approaches to *horizontal* catalog division, which is defined as "a division into separate catalogs each of which, within the fields it covers, is a complete dictionary catalog."¹²⁸ This approach is based on the idea that user friendliness may require the maintenance of separate catalogs to meet the needs of different users. Wright specifically suggested a "new books" catalog,¹²⁹ as did Morsch, who additionally suggested the usefulness of a "best books" catalog and "special catalogs for special patrons," which might include subject area catalogs containing more detail than the main library catalog.¹³⁰ Rosholt described a two catalog system in use at the Detroit Public Library, consisting of a complete catalog housed in the reference department and a catalog located in the circulation department intended for the "average reader" and including "only records for circulating books, the popular titles" and not for "older works, learned treatises and the like."¹³¹ This is somewhat analogous to Bishop's earlier suggestion that the maintenance of an official catalog for library staff would help keep catalogers from getting in the way of public catalog users, although Bishop presumably intended that the two catalogs should be identical.¹³² At any rate, Rosholt emphasized that the plan at the Detroit Public Library was not well received, and presumably it was abandoned.

A kind of horizontal division which had its roots in economic and administrative needs rather than user needs is the provision of supplements to a main catalog, whether in card, book or micro-form. Usually supplements of this kind have been made in order to avoid the difficulties of maintaining a comprehensive catalog, and the supplements generally consist of records for items cataloged during a given time period. Dwyer cautioned against the use of this sort of updating device, urging that, "given the substantial problems users have with multiple files, librarians should consider microcatalogs to be viable...if and only if they might reasonably expect to enter all bibliographic records into a single data base." The most significant of the difficulties pointed out by Dwyer was a tendency for a user to assume that whatever portion of the catalog he/she was using was the catalog in its entirety.¹³³

Aside from division of the alphabetical catalog, the main theme in the literature relating to catalog arrangement has been comparison of the alphabetical arrangement with a classified approach. Although by the turn of the century the alphabetical catalog had been predominant in American libraries for many years, many British libraries employed classified catalogs. Classified arrangement had its proponents among American libraries as well. Cutter, for instance, favored a classified arrangement, but

felt that it was too complex for library patrons to learn and use.¹³⁴ Even Fletcher, the early proponent of the divided alphabetical catalog, felt that a library really needed both an alphabetical catalog and a classified catalog, and proposed that shelflists be made public and modified to serve as classified catalogs.¹³⁵ This suggestion was repeated by Bishop, who stated that, "practically, then, an author and subject catalog arranged alphabetically, plus a duplication of the shelf-list, gives the most effective clue to the contents of the library."¹³⁶ Martel agreed: "In libraries mainly or exclusively devoted to reference service a classified catalog is needed, not to say indispensable" as well as an alphabetical catalog.¹³⁷ Watson argued for a separate alphabetical index to the shelf list in addition to the dictionary catalog.¹³⁸

McClelland supported the classified catalog as the best approach for the "scientific worker," contending that scientists classify their own collections and are familiar with the classified arrangements of abstract journals, that a classified catalog allows for easier incorporation of new ideas than does an alphabetical catalog, and that in general a classified catalog is less complex than a dictionary catalog.¹³⁹ Mishoff suggested that from a user's viewpoint a classified catalog is superior to a divided catalog, which is in turn superior to a dictionary catalog.¹⁴⁰ Rider raised the possibility that not only would a classified catalog with an alphabetical index be superior to an alphabetical catalog, but that it might be possible to employ a classified catalog and dispense with the classification of books.¹⁴¹

As suggested by McClelland, one of the recurring arguments in favor of the classified catalog is the ability to readily incorporate new subjects.¹⁴² According to Mortimer, "changes in nomenclature require merely an addition in the alphabetical index to the classified catalogue, while they might demand changed subject headings on many cards in the dictionary catalogue."¹⁴³ With an alphabetical catalog, then, there may be a strong incentive to maintain outdated headings which might not be present with a classified catalog.

According to Shera and Egan in their book on the classified catalog, "the complexities and intricacies involved in the use of the alphabetic arrangement may increase at a rate greater than the rate of physical growth." As a result the classified catalog, although less effective than an alphabetic catalog in a small library, may be more effective in a larger library.¹⁴⁴ User friendliness, then, may require different approaches in libraries of different sizes. Shera and Egan also enumerated the comparative advantages and disadvantages of the two catalog arrangements.¹⁴⁵ Although they stated that, "the fact that the arguments favoring the classified catalog out-

number those supporting the alphabetic arrangement does not necessarily argue for the superiority of the former in all situations,¹⁴⁶ it is clear that they felt that the user will most often benefit from the explicit classification of the classified catalog as opposed to the "concealed classification" of the alphabetical catalog.¹³⁷

In his text on the classified catalog, Kennedy stated that, "the classified catalogue answers all the questions which a dictionary catalogue answers and does one thing which the dictionary catalogue cannot do; it brings together books in the same subject and parts of that subject,"¹⁴⁸ and that this added feature is a significant advantage from the point of view of the library user. Kennedy later pointed out the advantage of a classified arrangement in a bilingual country,¹⁴⁹ an advantage also mentioned by Shera and Egan.¹⁵⁰ This advantage lies in the freedom of the classification system from reliance on any particular language.

On the other hand, Butcher felt that a study conducted in British libraries in the early 1950s showed that, "the principle of the classified catalogue is not immediately clear to readers..." and that the utilization of a classified catalog sacrificed the "requirements of the many..." in order to cater to the "special needs of the few."¹⁵¹

THE CONTENT OF CATALOG RECORDS

Another set of user-related issues relates to the descriptions of library holdings which the catalog provides. The issues include the amount and type of information to be included in catalog entries, the number and type of entries to be provided for given varieties of items, the nature of the headings to be used, and the arrangement of entries within the structure of the catalog. According to Cutter, dictionary catalogs could be divided into "short-title, medium-title and full title or bibliographic" categories. Cutter stated that his *Rules* were specifically designed for medium length entries, but expressed confidence that the rules could be used as well for short and full entries, and provided examples in his text of how this could be accomplished.¹⁵² In a way, Cutter chose to sidestep the issue of how much information should be provided regarding library holdings by formulating rules mostly for the middle ground situation and suggesting that they could be conveniently modified to meet other circumstances. Dewey, on the other hand, recommended that the anticipated kind of use should control the amount of information entered. According to Dewey, "a reader seeking a book of a known author, in the vast majority of cases, wants simply the number by which to call for it, and can find it much quicker in a

brief title catalog.... On the other hand, a reader seeking books on a known subject needs the full-title, imprint, cross references, and notes to enable him to choose the book best suited to his wants."¹⁵³ Bishop also supported this approach in his statement that, "the needs of his readers will necessarily govern the librarian's decision" as to fullness of entry.¹⁵⁴

Statements of support for full bibliographic and other information have been plentiful, and have almost always been accompanied by references to the needs of users. The following statements are typical: "Library catalogues, especially of free public libraries, should be framed to give as much information as circumstances will permit."¹⁵⁵ "The best principle is to err on the side of fullness."¹⁵⁶ "Abridgement of information almost invariably cuts out something that readers use."¹⁵⁷ "There is no point to the omission of important data that students will thereafter have to find for themselves, over and over again."¹⁵⁸ Ver Nooy provided one of the most extensive defenses of fullness of entry, describing how a biography of Richard R. Bowker could be constructed using only information drawn from catalog entries.¹⁵⁹

Supporters of less detailed catalog entries have more often cited budgetary considerations than meeting the needs of catalog users, although Stuart-Stubbs has said that, "we really give users more information than they need."¹⁶⁰ The same viewpoint had been expressed earlier by Wright, although Wright's arguments were aimed at providing support for economically-based decisions rather than expressing primary devotion to the needs of users.¹⁶¹ A similar opinion was that of Caldwell, who felt that, "the actual amount of bibliographical detail on each card might be curtailed as much as possible, not only for economy but for avoidance of confusion on the part of the reader."¹⁶² According to Dickinson:

puristic cataloging, which mandates "complete" bibliographic data, further obfuscates the catalog, at least for nonresearch users. Current LC cataloging clutters catalog entries with place of publication, book size, "Includes index" notes, and other information rarely consulted and almost never needed by garden-variety patrons.¹⁶³

Some authors have chosen to pursue the identification of items of data which are specifically user unfriendly. Butler pointed out that the measurement of the size of books in centimeters dates from Dewey's devotion to decimalization and is of limited usefulness to the users of libraries in a nonmetric country.¹⁶⁴ Draper conducted a study of the practice of enclosing in brackets dates not found on the title page, aimed at answering the question: "Does this cataloging practice have any relationship to the real needs and interests of the scholar-user?"¹⁶⁵ He

found that only 1 in 70 of his respondents knew the correct meaning of the practice in question, and that only 11 of 45 catalogers asked to comment on the practice expressed its use in terms of meeting user needs.¹⁶⁶ Dunkin asserted that catalog users actually have no need for collation at all, except possibly in the case of rare books.¹⁶⁷ In a study conducted by Miller, birth and death dates of authors, names of editors and illustrators, place of publication, publisher's name, and size of book were identified as the least used items of catalog record information, but it was pointed out that lack of use may be an indicator of a low level of patron understanding rather than of low intrinsic value.¹⁶⁸

Another set of suggestions has involved recommendations for data not normally included in catalog records such as "notes under each important entry, sufficient to explain it, and the bearing and comparative importance of all the books about it in the library,"¹⁶⁹ notes regarding the "scope and purpose of a book and also its style and readability,"¹⁷⁰ and a description of a system of reproducing tables of contents of books on catalog cards to "make more detailed information concerning the contents available."¹⁷¹

Randall explained the inclusion of unneeded data and the exclusion of useful data as a matter of historical precedent:

as each conception is replaced by a newer one, it is likely to leave behind as vestigial remains certain activities which are no longer useful in the new picture. Certain information is desirable about books when they are considered solely as artifacts or things of value. Other types of information are necessary when these books are considered as sources of knowledge. But some of the information needed in the first case is no longer necessary in the second case.

Randall, then, links the data to be included in catalog records to the purpose of the catalog, which is presumably a function of the needs of its users.¹⁷²

In part the amount and nature of the information provided must depend on who is expected to use the catalog. Following studies at the Denver Public Library and the University of Denver, Fernando Penalosa concluded that the most important distinction is between the needs of the public and the needs of librarians, and made the rather radical suggestion that two catalogs may be needed: a public catalog with expanded contents information and very little bibliographical data, and a catalog primarily for the use of library staff emphasizing complete bibliographical description.¹⁷³

Starting with Cutter's *Rules*, the amount and type of information to be provided in catalog entries and the manner in which such information

should be presented became closely tied to the joint concerns of standardization and the development and revision of cataloging codes. The history of codes for descriptive cataloging has been adequately detailed by Henderson¹⁷⁴ and Hagler.¹⁷⁵ For the most part, though, writings dealing with cataloging codes have been occupied with rules for entry almost to the exclusion of rules for description. As Gorman pointed out: "Descriptive cataloging is thought by many to be a rather disagreeable and tedious necessity, even by those who think it is a necessity at all, and this no doubt accounts for the comparative lack of theoretical (or, indeed, practical) writings on the subject."¹⁷⁶

THE NATURE OF CATALOG ENTRIES

Closely related to the question of how much and what kind of information should be included as part of a catalog record is the question of how access to records should be provided; that is, how many entry points should be provided for each item in the collection, and what should be the nature of those entries? The author main entry appears to have become firmly enough entrenched in the English-speaking world by the end of the nineteenth century that few if any writers chose to question the need for an entry for the author of each book in a library's collection. There has been less agreement with regard to title, subject and other added entries.

With regard to title entries, for instance, Keller encouraged that "every excuse for making a title card be welcomed,"¹⁷⁷ and Hagedorn contended that, "there must, of course, be a title for every volume in the library, even for those beginning 'Bulletin of the' or 'Report of the,' to say nothing of their foreign equivalents." Contrary to standard practice in many libraries, Hagedorn believed that, "it is clearly the commonplace and not the distinctive title that is remembered."¹⁷⁸ Swanson's analysis of the Chicago Requirements Study led to the conclusion that, "access should be provided not only by the title taken as a whole, but by each word of the title taken separately as an alphabetic entry."¹⁷⁹ Kelley, on the other hand, suggested that catalog use is impeded by a proliferation of title entries, and proposed severe curtailment of the creation of such entries, her justification being that too many titles begin with the same word or words and that users rarely know the exact titles of books. In Kelley's scheme, subject cataloging, then, would take the place of many title entries.¹⁸⁰ Clearly, Swanson and Kelley were addressing the same fundamental problem, although the conclusions they reached were diametrically opposed.

Some authors have encouraged the use of "title page" cataloging, which eliminates the problem of the user who attempts "to find *Dr. Seuss* books that are mysteriously cataloged under Theodor Seuss Geisel."¹⁸¹ The general contention here is that the use of "real" names rather than pseudonyms and the use of uniform titles rather than titles taken from the book in hand offer a disservice to catalog users. With regard to authors' names, this common complaint appears to have found its resolution in the *Anglo-American Cataloguing Rules*, although the Library of Congress's policy of superimposition delayed the implementation of title-page cataloging. In addition, AACR2 seems to have confused things somewhat by encouraging the use of authors' names as found in their works while at the same time encouraging increased use of uniform titles. At any rate, it is not clear whether the motivation for encouraging title-page cataloging in the *Anglo-American Cataloguing Rules* came from adherence to the needs of users or an interest in cost saving.

A number of authors have addressed the issue of the necessity for subject entries, including Dana, who advocated very thorough subject analysis: "It is desirable to add to the subject-list by writing as many cards for each book as the importance of the several subjects therein and the space the author gives to them seem to demand."¹⁸³ Highfill suggested that the apparent dominance of known-item searches over subject searches might be a result of inadequate subject analysis and that in order "to increase the retrieval potential of the subject catalog, the number of subject access points per document should be increased."¹⁸⁴ A study at the University of California in the early 1950s had as its subject the comparative usefulness of the subject approach to a catalog search and the author-title approach, with the possible outcome of elimination of all or part of the library's subject cataloging.¹⁸⁵ The author of the study concluded that subject cataloging for foreign language books and books more than 20 years old could be eliminated without significantly decreasing catalog efficiency or harming users. Although the motivation for this study was almost entirely a matter of cost saving, the needs of users were considered a limiting and controlling factor. Goldhor suggested that there were entire categories of books for which catalog entries were of no benefit to the user, including "mysteries, westerns, science fiction..." and "light loves,..." since "a person who wants a mystery is not going to look through the catalog but will select one from those on the shelf at the time."¹⁸⁶

Subject headings have been discussed rather extensively by writers interested in adapting library catalogs to their users. According to Haykin's text on subject headings:

to the extent that the headings represent the predilection of the cataloger in regard to terminology and are dictated by conformity to a chosen logical pattern, as against the likely approach of the reader resting on psychological rather than logical grounds, the subject catalog will lose in effectiveness and ease of approach.¹⁸⁷

Two important aspects of this discussion have been the need to keep subject headings up to date and the level of specificity which should be sought in the formulation of subject headings.

The former issue centers on two considerations which are seemingly mutually exclusive: the economic need to make as few changes in subject headings as possible and the service need to keep subject headings in line with current usage. For the most part, subject headings have been devised either through consideration of "the universe of knowledge" and appeals to established classification schemes, or through "literary warrant," derived from the examination of the works themselves. Randall, however, argued that neither of these approaches is appropriate, and that, "it is the patron who must decide which term is to be used." Randall concluded that it is impractical to develop one universal set of subject headings, and that, "many lists of subject headings are needed, each one attuned, as it were, to the particular group which is to use it."¹⁸⁸ As a result, the formulation of subject headings, according to Randall, would be an endless, but infinitely worthwhile task whose "performance will produce a tool which is fitted to the hand of the student who must use it."¹⁸⁹ Phelps was concerned that the continued use of outdated subject headings resulting from financial limitations might lead library users "to suspect that we are as behind the times as our subject headings."¹⁹⁰ It was Phelps's conclusion that the situation was virtually hopeless and that the only solution was to abandon alphabetical subject headings in favor of a classified catalog. As was seen earlier, this has been a common argument in support of classified catalogs.

Ellsworth and Kerr suggested that users really do want subject access, but apparently not of the variety usually provided; unfortunately, neither author was able to suggest appropriate alternatives.¹⁹¹ Watson criticized "slavish adherence to all of the stereotyped—often antiquated—headings dictated by the Library of Congress,"¹⁹² and it was Hamilton's opinion that, "the catalogue ought to have headings for subjects...that are on everyone's tongue."¹⁹³ White criticized the static nature of subject headings and suggested that the problem of changing subject headings might be solved by the use of dated cross-references to link current headings to superseded headings.¹⁹⁴

Discussing the form of subject headings, Cutter commented that, "if the public could ever get as accustomed to the inversion of subject-names as they are to the inversion of personal names the rule would undoubtedly be very convenient; but it might be difficult to teach the rule."¹⁹⁵ A study of 1300 high school students in Oklahoma provided at least some confirmation of the preference of the public for uninverted headings.¹⁹⁶ Cutter was also responsible for formulating the rule of specific entry, under which a subject is presumably entered under the most specific term available, as opposed to an indirect entry under a broader heading.¹⁹⁷ The Oklahoma study by Marable suggested that high school students prefer specific entry of subjects, but according to Frarey, "the evidence from studies of use points to widespread failure to comprehend the principle of specific entry, at the same time that it suggests preference on the part of users for it."¹⁹⁸

The level of specificity expressed by subject headings is reflected to some extent by the number of entries under each heading, a consideration which is obviously dependent upon the size and nature of a given library and which is subject to variations, not only from one library to another, but from one time to another in a single library. There are, therefore, expressions of discontent with excessive detail, as in the statement of one librarian that too many entries under a single main heading in a small library's catalog might have different subheadings¹⁹⁹ and descriptions of subject headings which were applied to "hundreds or even thousands" of entries.²⁰⁰ The latter point was given support by Krikelas's finding that, "the point at which an entry seems to be meaningless—the point at which a searcher will not look through a file card-by-card—is when it produces between 200 and 300 nearly identical references."²⁰¹ These problems call into question the essentially universal use of standardized subject-heading lists and the acceptance of subject cataloging from sources outside the local library.

THE ARRANGEMENT OF ALPHABETICAL ENTRIES

Beyond the issue of what form headings should take and what entries should be made lies the question of the order in which those entries should be presented to the user of the catalog. In a classified catalog this is more or less obvious in that filing order should be a direct reflection of the classification scheme employed. Most alphabetical catalogs, however, whether dictionary or divided, have used not a true alphabetical arrangement but some sort of alphabetic-classed catalog in which relationships among related items are shown through the filing pattern. The specific manner in which such relationships are reflected is a function of the set of filing rules

in use in a given situation. Cartwright has suggested two basic purposes of filing rules: (1) to minimize the time required to search a file, and (2) to maximize the probability that, if an item is in the file, it will be found when it is sought.²⁰²

Two major sets of suggestions have been made regarding the alphabetico-classed catalog. The first involves modifications that retain the alphabetico-classed arrangement. Bishop and Kelley both suggested that within a given subject category entries should be arranged in reverse chronological order rather than alphabetically, the assumption being that library users will generally be most interested in the most recently published work on a given subject.²⁰³ This is typical of suggestions which preserve the basic alphabetico-classed arrangement but which attempt to alter it to meet user needs.

The second set of suggestions calls for total abandonment of the alphabetico-classed approach in favor of a straight alphabetical arrangement similar to that of "dictionaries and common directories."²⁰⁴ The justification for this is that an alphabetico-classed arrangement is inherently too complex to be readily understandable to most users, and that the logical structure of the alphabetico-classed catalog is therefore not worth the effort invested in its creation and maintenance. Quinn termed the alphabetico-classed catalog "a most unsatisfactory and wasteful form..." which "contains the worst features of both [alphabetical and classified catalogs] without any of the advantages of either."²⁰⁵ Preston wrote that, "the necessity of mastering a complex system of filing before using the catalog will increase rather than lessen the difficulties of the user..."²⁰⁶ and that "it is quite obvious that such classed arrangements are certain to confuse all except those who have made a study of the arrangement of cards in a library catalog."²⁰⁷ Preston compared word-by-word and letter-by-letter alphabetical filing, concluding that word-by-word filing is easier to use²⁰⁸ and proposed an almost-alphabetical scheme to supplant existing alphabetico-classed arrangements. Scheerer's comments are also typical:

In recent years, judging by reports in the literature, more and more libraries have gone over to the alphabetic word-by-word filing of the telephone directory that ignores subject-heading forms. There has been no adverse reaction from users. No matter what system is followed for an alphabetic classification the reader has to jump irrelevant headings as he searches a subject area and picks out those that may be relevant to his purpose. Beyond this common drawback the strict alphabetic arrangement with its orderly precision has the advantage of being intelligible.²⁰⁹

This philosophy has been expressed more recently by Voos, who again stated the belief that a strictly alphabetical arrangement "might make things easier for the user."²¹⁰

CONCLUSIONS AND IMPLICATIONS

The literature of the library catalog clearly shows a concern for the users of libraries as a focus for design of library catalogs. Unfortunately, this concern has been mostly unsystematic and has resulted in the implementation of methodologies and systems that have sometimes been of questionable value and almost always based on untested assumptions regarding the needs and wants of catalog users. At times appeals to the needs of users seem to have been employed to justify decisions that were in fact motivated primarily by economic, administrative or other considerations or by librarians' personal prejudices. Other suggestions that may have been of merit have not been put to the test. In many instances, different writers have supported mutually exclusive catalog models on the basis of their user orientation. Some issues, such as the relative merits of card and book catalogs and the dictionary catalog *v.* divided catalog controversy, have been argued over the course of more than half a century without resolution.

As Bates has pointed out, "many catalog use studies have been produced, but the cumulative knowledge resulting from them is not great."²¹¹ Elsewhere it has been pointed out that the results of such studies have rarely been heeded.²¹² Furthermore, many of the studies conducted have been of questionable validity, and their results are therefore of rather limited value. As Lancaster has suggested, surveys of user opinion lead to inconclusive results, and potentially more meaningful studies are difficult to conduct and to evaluate.²¹³ Grose and Line were very pessimistic about current catalog design:

We have then the following situation: we want somehow to cut cataloguing costs; we don't know whether we need catalogues at all; we don't know what purpose they serve, or might serve; if we do need them, we don't know what entries they should contain, nor how they should be arranged; and if we did know what entries they should contain, we still don't know what information the entries should themselves contain, nor how it should be arranged.²¹⁴

At present, a great many libraries are contemplating or actively planning the implementation of online interactive library catalogs, a development described as the dawn of a new era that, "portends improved patron access."²¹⁵ Gorman has justifiably suggested that, "technology is almost the least of the problems associated with online catalogs..." and has enumerated four "critical differences between online catalogs and catalogs of the past."²¹⁶ It is interesting to note that two of these four "differences," the potential availability of the catalog outside the library and access to holdings of more than one library, were cited more than a century ago as

advantages of printed book catalogs and later in support of microform catalogs. It also appears to be true that many decisions regarding online catalog design, including the very fundamental decision to construct and implement such systems, have been made on the basis of untested assumptions regarding user friendliness. It seems to have been commonly assumed, for instance, that online systems are inherently more user friendly than existing systems, but it is not certain that this is true. If the crucial decisions relate to economics, ease of maintenance or other factors unrelated to user friendliness, the question to be answered is whether such considerations should take precedence over the needs of users. As Hickey has pointed out, the ability of library users to accept change must have some limit,²¹⁷ and unless a new system offers some improvement in user friendliness, the needs for adjustment and relearning may outbalance any gains which do not directly benefit the catalog user.

Supporting statements of faith in the power of online catalogs notwithstanding, some systems that have been implemented appear to be almost direct reconstructions of previous catalogs, differing only in physical format, while others actually provide less data and fewer access points than card or other nonautomated catalogs. Even the supporters of existing online systems have expressed certain reservations. A study conducted at Ohio State University, for instance, indicated that some users tried the online catalog but preferred the card catalog and that, "the online catalog did not serve as a complete replacement for the card catalog for most users."²¹⁸

Admittedly, the design of online catalogs is not yet in an advanced state, and studies are underway to determine the needs of users of such systems. Presumably, an online catalog should achieve a level of user friendliness impossible in the past, but it is not at all certain whether the present inquiries will overcome the limitations of past studies or how the concern for the interests of users expressed by designers of online systems will be affected by the kinds of economic and administrative factors that have been influential in the past. It is possible that the transition to a new technology should be accompanied by a reevaluation of needs, goals and philosophies, but the procedures and practices of the past and present often exert a pressure which is difficult to overcome, and there is a legitimate need to maintain some sort of continuity with existing catalogs. It does seem advisable, however, given the substantial resources necessary for the large-scale implementation of a new technology, to do everything possible to ensure the wise utilization of those resources.

It is appropriate at this point to return to the 12 objectives of a user-oriented system enumerated by Dehning, Essig and Maass. Although they were not considering library catalogs specifically, their perspectives provide a useful basis for summarizing the present study and drawing some conclusions regarding existing catalogs:

1. The system's behaviour towards the user must be flexible so that the user is not forced to act in a strictly prescribed way.
2. A system must be able to distinguish among several users and adapt to them.²¹⁹

These two objectives imply that there should be no single correct way in which to use a system. Library catalogs have attempted to accommodate the first objective, in a very limited way, to the extent that they have allowed for approaches by author, title, subject, form, or other characteristics. There have almost always been the assumptions, however, that it is appropriate to make available in a given catalog only a few of the many possible approaches, and that it is the responsibility of the user to learn which approaches are available. The recognition that different classes of users may utilize different basic approaches to catalog use has occasionally led to the expansion of access points and catalog capabilities, as discussed earlier in the section on "The Purpose of the Catalog." It has also been used as an excuse for limiting flexibility.

3. The system behaviour and its effects should be transparent to the user.²²⁰

In effect the user should need no direct knowledge of the processes and machinery that make up the system. If this is true, then the problems of catalogers should be irrelevant to the problems of catalog users except when failure to resolve them leads to ineffective catalogs. It is clear, though, that the ability to use existing catalogs to their fullest extent requires considerable knowledge of the decisions and rules that govern their creation. The history of user friendliness provides considerable evidence of this dilemma.

4. The system should always be helpful; it should never force the user into embarrassing situations.²²¹

For this objective to be met in a library catalog, no attempt to search the catalog should meet with total failure. The least result should be that the user is redirected to a valid approach or to a source of assistance. Attempts at meeting this objective have taken the form of cross-references and various kinds of guiding devices. In most libraries, however, these tools have not been adequately utilized. It is also true that the provision of reference librarians or other persons whose function is to interpret the

catalog has not always been as effective as it might have been, partly because their role in relation to the catalog has not been properly defined.

5. Man-machine interaction should resemble—as far as possible—human communication.
6. System design has to take into consideration the physical and psychical needs of the user during his work with the computer.
7. System use should require no special skills.
8. Special physical and motorial skills should not be required.
9. The common linguistic and communicative skills of the user must be sufficient for leading simple dialogs.²²²

These five objectives require a system that asks the user to learn no new skills. The physical skills necessary for the use should be those which the user already possesses, and it should not be necessary to learn a new language. Concern for these factors has led to the extensive debate regarding the physical form of the catalog, described earlier in the section on “The Basic Arrangement of the Catalog.” The issue has never been resolved. Even the simplest of catalogs requires that the user learn new language skills in order to formulate queries and interpret catalog records. In effect, the inability or unwillingness of library users to acquire these language skills has probably led to considerable underutilization of library catalogs.

10. The system should behave in a consistent way so that the user can learn to anticipate it.²²³

Consistency would seem to be one of the easier objectives to achieve. Presumably the development of codes and subject-headings lists, and various cooperative efforts have been attempts to achieve consistency. Such attempts have not been totally successful. Exceptions to rules are possibly as numerous as the rules themselves, and the codes of rules are not easy to interpret or apply. Subject headings often appear to have been created on an ad hoc basis rather than systematically. Changes in practice often result in records whose appearance and content vary substantially according to their age. Cooperative cataloging has had some power to remedy local peculiarities, but it may also aggravate the problem of inconsistency by minimizing adaptation to local needs, as has been indicated in the earlier section on “The Content of Catalog Records.”

11. The possible kinds of problem-solving should not be limited by the system.²²⁴

This is closely related to the first two objectives. Library catalogs are used in order to solve individual problems. Human beings approach problems

in a wide variety of ways, but library catalogs typically are designed with a fairly strict set of problem-solving techniques in mind. It has been assumed that the user's needs will fall into one of a limited number of patterns, and that each pattern will necessitate a single approach to the catalog. All problems requiring work dealing with a given subject, for instance, are assumed to be basically similar, and it is expected that one approach to subject searching will satisfy all needs. It may actually be the case that different users require different kinds of access to the same kind of information, an idea described earlier in the section on "The Content of Catalog Records."

12. The human ability of learning by doing should be exploited moderately.²²⁵

The key word in this objective is "moderately." Although any system should allow the user to gain expertise as a result of increased experience, an inexperienced user should be able to successfully meet his/her needs. Experience should enhance efficiency, but should not be a prerequisite to success. Although it is sometimes assumed that this objective is met by library catalogs, that assumption is in need of testing.

Given these objectives, it seems unlikely that any of the catalogs available or proposed during the period under consideration here could have been made fully user friendly, and it may prove impossible to achieve all of these twelve objectives in an online catalog. The failure to make catalogs user friendly, however, may be largely a matter of a failure to appraise the need for user friendliness rather than of technological limitations. A fully user-friendly catalog may be an unattainable ideal, but obviously there is a need to work toward its goals. Draper has accused librarians of what he termed "bibliothecal solipsism..."—"the implicit belief that libraries exist for the sake of the activity known as librarianship and the shadowy figures from the Outside who wander about the catalog with a bewildered look are Aliens whose main function is to get in the way of librarians."²²⁶ If the library catalog is indeed a tool for the library user, designers of future catalogs would do well to approach the problem of meeting user needs in a more systematic and reliable manner than that which has prevailed in the past. A well-formed set of objectives similar to that enumerated by Dehning, Essig and Maass, and a commitment to their achievement may help reduce the confusion and controversy that have characterized the issue.

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VITA

Danny P. Wallace is a doctoral student, Graduate School of Library and Information Science (GSLIS), the University of Illinois at Urbana-Champaign. His specialties in the field of Library Science include bibliometrics and the design of user-friendly information systems. He received his M.A.L.S. from the School of Library and Informational Science, University of Missouri-Columbia (1977) and a B.S.Ed. with majors in speech/dramatic arts and English from Southwest Missouri State University (1973).

Mr. Wallace has been an Assistant Director and Research Associate at the GSLIS, Library Research Center, University of Illinois since August 1983. He has been an instructor at the School of Library Science, University of Iowa, Iowa City (August 1980-August 1981; June 1983-August 1983). While at the University of Iowa he was adjunct lecturer, School of Library Science (September 1979 to May 1980), and reference librarian (October 1977-August 1980). He was also a graduate teaching assistant at the school of Library and Informational Science, University of Missouri-Columbia (1976-77).

Mr. Wallace's previous publications include *The 1982 Index of Quality of Illinois Public Library Service; Performance Measures in Illinois Special Libraries; 1981 Survey of Illinois Special Libraries; 1981-82 Illinois Public Library Statistics: Analyses*; and "1983 Survey Sneak Preview: Salaries of Illinois Special Librarians and Information Center Managers" (*The Informant* 47[May 1983]:14-17).

